

1 I claim:

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3 1. A surgical instrument for scraping bone comprising:

4 a generally planar blade having a first end and a second end separated by a
5 middle section, the first end having a cutting edge and an opening to allow bone
6 shavings to pass therethrough and the middle section having at least one outwardly
7 extending lobe;

8 a collection chamber for holding accumulated bone shavings having a bottom,
9 sidewalls, and an end wall, the chamber having a upstanding retainer member for
10 securing the at least one lobe of the blade to the collection chamber; and

11 an elongated handle portion coupled to the end wall of the collection chamber.

12 2. The surgical instrument of claim 1, wherein the elongated handle portion is
13 flexibly secured to the end wall.

14 3. The surgical instrument of claim 1, wherein the collection chamber
15 comprises a mixing area for mixing the bone shavings, blood and other constituent
16 graft materials.

17 4. The surgical instrument of claim 1, wherein the collection chamber and the
18 elongated handle portion are coupled by an area of reduced mechanical strength.

19 5. The surgical instrument of claim 4, wherein the area of reduced mechanical
20 strength comprises a flexible or bendable joint.

21 6. The surgical instrument of claim 1, wherein the collection chamber
22 comprises a polymeric material or stainless steel.

23 7. The surgical instrument of claim 6, wherein the polymeric material is a
24 medical grade plastic.

25 8. The surgical instrument of claim 1, wherein the collection chamber
26 comprises a transparent or translucent plastic material.

27 9. The surgical instrument of claim 4, wherein the area of reduced mechanical
28 strength allows the cutting edge to be positioned at a range of angles relative to a
29 longitudinal axis of the handle portion.

30 10. The surgical instrument of claim 1, wherein the blade comprises stainless
31 steel or monocrystalline sapphire.

1 11. The surgical instrument of claim 1, wherein the blade comprises a pair of
2 opposing lobes.

3 12. The surgical instrument of claim 11, wherein the pair of opposing lobes
4 are disposed adjacent an elongated longitudinal slot.

5 13. The surgical instrument of claim 1, wherein the middle section of the
6 blade comprises an elongated longitudinal slot adjacent the at least one outwardly
7 extending lobe.

8 14. The surgical instrument of claim 1, wherein the second end comprises a
9 stop mechanism to restrict linear travel of the blade relative to the collection chamber.

10 15. The surgical instrument of claim 1, wherein the elongated handle portion
11 is coupled to the end wall of the collection chamber through a ball and socket joint.

12 16. The surgical instrument of claim 1, wherein the second end comprises a
13 stop mechanism for positioning the blade in the instrument.

14 17. The surgical instrument of claim 1, wherein the second end comprises a
15 protrusion for facilitating extraction of the blade from the collection chamber.

16 18. The surgical instrument of claim 1, wherein the second end comprises an
17 opening through which a prying device may be inserted to facilitate extraction of the
18 blade from the collection chamber.

19 19. The surgical instrument of claim 1, wherein the upstanding retainer
20 mechanism comprises a first cam surface, a second cam surface and a ledge portion.

21 20. The surgical instrument of claim 19, wherein the ledge portion helps
22 maintain at least a portion of the blade in contact with a top surface of the collection
23 chamber.

24 21. The surgical instrument of claim 20, wherein the ledge portion is spaced
25 from the top surface approximately the thickness of the blade.

26 22. The surgical instrument of claim 1, wherein the side walls of the
27 collection chamber support the first end of the blade in the instrument.

28 23. The surgical instrument of claim 1, wherein the collection chamber further
29 comprises a stabilizing members to restrict rotational movement of the blade in the
30 instrument.

31 24. The surgical instrument of claim 19, wherein the first cam surface applies

1 a first compressive force on the at least one lobe when a second compressive force is
2 applied to the second end of the blade.

3 25. The surgical instrument of claim 24, wherein the first compressive force
4 urges the at least one lobe to be displaced toward a centerline of the blade.

5 26. The surgical instrument of claim 25, wherein the blade comprises an
6 elongated slot along the centerline and the at least one lobe extends into the slot when
7 the first compressive force is applied.

8 27. A surgical instrument for scraping bone comprising:
9 a blade having a first end having a cutting edge and an opening to allow bone
10 shavings to pass therethrough;
11 a collection chamber for holding accumulated bone shavings having a bottom,
12 sidewalls, and an end wall, a portion of the side wall supporting a portion of the blade;
13 and

14 an elongated handle portion coupled to the end wall of the collection chamber
15 through a flexible joint.

16 28. The surgical instrument of claim 27, wherein the elongated handle portion
17 is flexibly secured to the end wall.

18 29. The surgical instrument of claim 27, wherein the collection chamber
19 comprises a mixing area for mixing the bone shavings, blood and other constituent
20 graft materials.

21 30. The surgical instrument of claim 27, wherein the collection chamber and
22 the elongated handle portion are coupled by an area of reduced mechanical strength.

23 31. The surgical instrument of claim 30, wherein the area of reduced
24 mechanical strength comprises a flexible or bendable joint.

25 32. The surgical instrument of claim 27, wherein the collection chamber
26 comprises a polymeric material or stainless steel.

27 33. The surgical instrument of claim 32, wherein the polymeric material is a
28 medical grade plastic.

29 34. The surgical instrument of claim 27, wherein the collection chamber
30 comprises a transparent or translucent plastic material.

1 35. The surgical instrument of claim 30, wherein the area of reduced
2 mechanical strength allows the cutting edge to be positioned at a range of angles
3 relative to a longitudinal axis of the handle portion.

4 36. The surgical instrument of claim 27, wherein the blade comprises stainless
5 steel or monocrystalline sapphire.

6 37. The surgical instrument of claim 27, wherein the blade comprises a pair of
7 opposing lobes.

8 38. The surgical instrument of claim 37, wherein the pair of opposing lobes
9 are disposed adjacent an elongated longitudinal slot.

10 39. The surgical instrument of claim 27, wherein the middle section of the
11 blade comprises an elongated longitudinal slot adjacent the at least one outwardly
12 extending lobe.

13 40. The surgical instrument of claim 27, wherein the second end comprises a
14 stop mechanism to restrict linear travel of the blade relative to the collection chamber.

15 41. The surgical instrument of claim 27, wherein the elongated handle portion
16 is coupled to the end wall of the collection chamber through a ball and socket joint.

17 42. The surgical instrument of claim 27, wherein the second end comprises a
18 stop mechanism for positioning the blade in the instrument.

19 43. The surgical instrument of claim 27, wherein the second end comprises a
20 protrusion for facilitating extraction of the blade from the collection chamber.

21 44. The surgical instrument of claim 27, wherein the second end comprises an
22 opening through which a prying device may be inserted to facilitate extraction of the
23 blade from the collection chamber.

24 45. The surgical instrument of claim 27, wherein the upstanding retainer
25 mechanism comprises a first cam surface, a second cam surface and a ledge portion.

26 46. The surgical instrument of claim 45, wherein the ledge portion helps
27 maintain at least a portion of the blade in contact with a top surface of the collection
28 chamber.

29 47. The surgical instrument of claim 46, wherein the ledge portion is spaced
30 from the top surface approximately the thickness of the blade.

31 48. The surgical instrument of claim 27, wherein the side walls of the

1 collection chamber support the first end of the blade in the instrument.

2 49. The surgical instrument of claim 27, wherein the collection chamber
3 further comprises a stabilizing members to restrict rotational movement of the blade in
4 the instrument.

5 50. The surgical instrument of claim 45, wherein the first cam surface applies
6 a first compressive force on the at least one lobe when a second compressive force is
7 applied to the second end of the blade.

8 51. The surgical instrument of claim 50, wherein the first compressive force
9 urges the at least one lobe to be displaced toward a centerline of the blade.

10 52. The surgical instrument of claim 51, wherein the blade comprises an
11 elongated slot along the centerline and the at least one lobe extends into the slot when
12 the first compressive force is applied.

13 53. A surgical instrument for scraping bone comprising:

14 a generally planar blade having a first end and a second end separated by a
15 middle section, the first end having a cutting edge and an opening to allow bone
16 shavings to pass therethrough and the middle section having at least one outwardly
17 extending lobe, and the second end comprising a pair of cantilevered spring elements;
18 a collection chamber for holding accumulated bone shavings having a bottom,
19 sidewalls, and an end wall, the chamber having a upstanding retainer member for
20 securing the at least one lobe of the blade to the collection chamber, and a retaining
21 mechanism for interacting with the blade spring elements; and
22 an elongated handle portion coupled to the end wall of the collection chamber.

23 54. The surgical instrument of claim 53, wherein the elongated handle portion
24 is flexibly secured to the end wall.

25 55. The surgical instrument of claim 53, wherein the collection chamber
26 comprises a mixing area for mixing the bone shavings, blood and other constituent
27 graft materials.

28 56. The surgical instrument of claim 53, wherein the collection chamber and
29 the elongated handle portion are coupled by an area of reduced mechanical strength.

30 57. The surgical instrument of claim 56, wherein the area of reduced
31 mechanical strength comprises a flexible or bendable joint.

- 1 58. The surgical instrument of claim 53, wherein the collection chamber
2 comprises a polymeric material or stainless steel.
- 3 59. The surgical instrument of claim 58, wherein the polymeric material is a
4 medical grade plastic.
- 5 60. The surgical instrument of claim 53, wherein the collection chamber
6 comprises a transparent or translucent plastic material.
- 7 61. The surgical instrument of claim 56, wherein the area of reduced
8 mechanical strength allows the cutting edge to be positioned at a range of angles
9 relative to a longitudinal axis of the handle portion.
- 10 62. The surgical instrument of claim 53, wherein the blade comprises stainless
11 steel or monocrystalline sapphire.
- 12 63. The surgical instrument of claim 53, wherein the middle section of the
13 blade comprises a pair of opposing lobes.
- 14 64. The surgical instrument of claim 63, wherein the pair of opposing lobes
15 are disposed adjacent a pair of hold-down tabs formed on the collection chamber.
- 16 65. The surgical instrument of claim 53, wherein the elongated handle portion
17 is coupled to the end wall of the collection chamber through a ball and socket joint.
- 18 66. The surgical instrument of claim 53, wherein the second end comprises a
19 stop mechanism for positioning the blade in the instrument.
- 20 67. The surgical instrument of claim 53, wherein the second end comprises a
21 sloped surface for facilitating extraction of the blade from the collection chamber by
22 means of a prying device.
- 23 68. The surgical instrument of claim 53, wherein the retainer mechanism
24 comprises a pin.
- 25 69. The surgical instrument of claim 53, wherein the side walls of the
26 collection chamber support the first end of the blade in the instrument.
- 27 70. A blade for a bone scraping surgical instrument comprising:
28 a first end and a second end separated by a middle section, the first end having
29 a cutting edge and an opening to allow bone shavings to pass therethrough and the
30 middle section having a pair of outwardly extending lobes disposed on either side of a
31 centrally located elongated opening.

1 71. The blade of claim 70, wherein the second end has a stop mechanism to
2 limit linear travel of the blade when coupled to a cooperating collection chamber.

3 72. The blade of claim 70, wherein the second end has a protrusion for
4 facilitating extraction of the blade from a cooperating collection chamber.

5 73. The blade of claim 70, wherein the second end has an opening through
6 which a prying instrument can be inserted to facilitate extraction of the blade from a
7 cooperating collection chamber.

8 74. The blade of claim 70, wherein the secured end comprises a pair of
9 cantilevered spring elements.

10 75. The blade of claim 70, wherein the secured end includes indicia for
11 indicating correct orientation of the blade.

12 76. The blade of claim 75, wherein the indicia comprises a notch on one side
13 of the blade.

14 77. The surgical instrument of claim 1, wherein the blade includes a pair of
15 cantilevered spring elements adjacent its proximal end.

16 78. The blade of claim 77, wherein the cantilevered spring elements form
17 tension cam surfaces for engaging with a follower pin on the collection chamber.

18 79. The surgical instrument of claim 78, wherein the follower pin is formed of
19 a material harder than the blade material.

20 80. The surgical instrument of claim 27, wherein the blade includes a pair of
21 cantilevered spring elements adjacent its proximal end.

22 81. The blade of claim 80, wherein the cantilevered spring elements form
23 tension cam surfaces for engaging with a follower pin on the collection chamber.

24 82. The surgical instrument of claim 81, wherein the follower pin is formed of
25 a material harder than the blade material.

26 83. The surgical instrument of claim 53, wherein the blade includes a pair of
27 cantilevered spring elements adjacent its proximal end.

28 84. The blade of claim 83, wherein the cantilevered spring elements form
29 tension cam surfaces for engaging with a follower pin on the collection chamber.

30 85. The surgical instrument of claim 84, wherein the follower pin is formed of
31 a material harder than the blade material.

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